

CLAIMS

What is claimed is:

1. A medical infusion and aspiration system for accurate pulsatile delivery, the medical infusion and aspiration system comprising:

at least one cassette having a cartridge, a housing and a plunger; the cartridge having a cylindrical shape, an outer cartridge surface, a reservoir area, and a neck opening; the outer cartridge surface having a threaded surface and an encoded area; the housing having a bottom surface, a central axis and an inner threaded surface,

an infusion tube,

a pumping mechanism having a gear linkage, a motor and a pumping device, and

an in-line sensor probe.

2. The medical infusion and aspiration system of claim 1, wherein the outer cartridge surface is in threaded relationship to the housing inner threaded surface.
3. The medical infusion and aspiration system of claim 1, wherein the infusion tube is connectively coupled to the neck opening.
4. The medical infusion and aspiration system of claim 1, wherein the cartridge is configured to receive a cap and a container top.

5. The medical infusion and aspiration system of claim 1, wherein the housing has a plurality of openings parallel to the central axis of the housing; the plurality of openings allows for trapped air to be exhausted and creates an inspection window.
6. The medical infusion and aspiration system of claim 1, wherein the bottom surface of the housing has a lip to receive a removable cover.
7. The medical infusion and aspiration system of claim 1, wherein the encoded area comprises an optical or electromagnetic strip.
8. The medical infusion and aspiration system of claim 1, wherein the plunger is aligned with the central axis of the housing and configured to fit within the reservoir area.
9. The medical infusion and aspiration system of claim 1, further comprising a mechanism capable of reading the encoded area.
10. The medical infusion and aspiration system of claim 1, wherein the gear linkage connectively couples the motor to the piston or to the housing outer surface.
11. The medical infusion and aspiration system of claim 10, wherein the motor causes a lateral and axial rotation of the plunger.
12. The medical infusion and aspiration system of claim 11, wherein the lateral and axial rotation of the plunger is bi-directional.
13. The medical infusion and aspiration system of claim 1 wherein the in-line sensor probe is located in the infusion tube.

14. The medical infusion and aspiration system of claim 13, wherein the in-line sensor probe determines a chemical component and a level of substrates in an aspirated fluid.
15. The medical infusion and aspiration system of claim 1, wherein the pumping device has at least one source of information input.
16. The medical infusion and aspiration system of claim 1, wherein the at least one cassette comprises at least two cassettes.
17. The medical infusion and aspiration system of claim 16, wherein the at least two cassettes are coupled and driven independently or in mechanical linkage.